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NEWSLETTER 9/2024

TALON PROJECT



TALON

Autonomous and self-organised artificial intelligent
orchestrator for a greener industry 5.0

talon-project.eu

EDITORIAL

T This newsletter presents a summary of the primary dissemination outcomes of the project, which include organization of events and technological developments. Specifically, three (3) project developments by TALON partners.

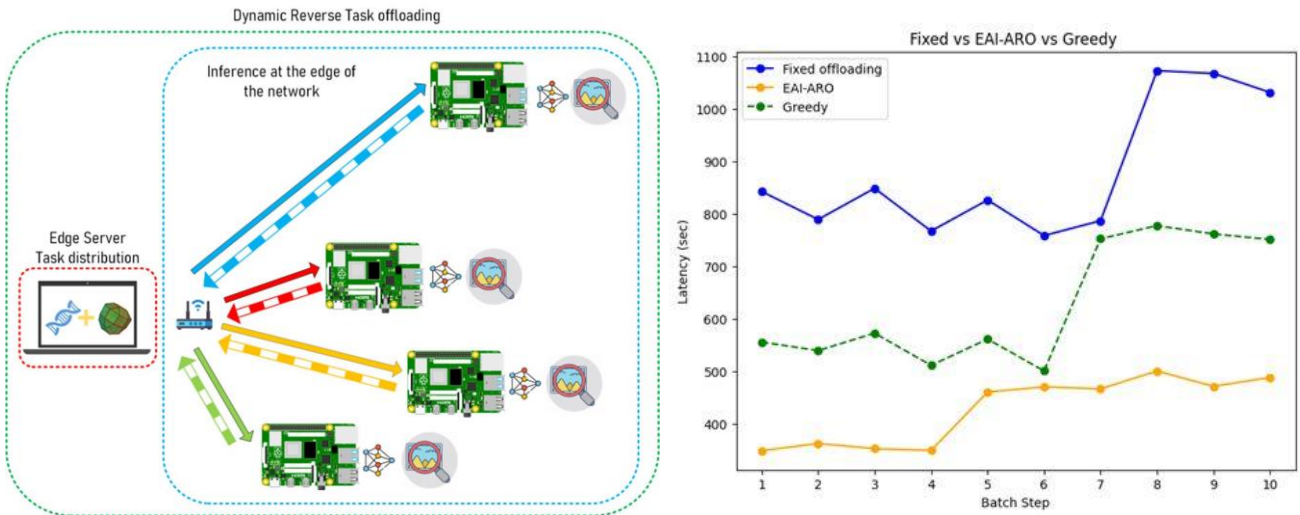
Stylios Trevlakis, InnoCube

DUTH @ TALON

The Department of Informatics part of the Democritus University of Thrace is a well-known institution that has significantly contributed to various R&D projects. Located in Kavala, Greece, and part of the University’s School of Sciences, the department plays an active role in TALON, particularly through its research on innovative task offloading algorithms for AI processing on edge devices, a key aspect of the Industry 5.0 paradigm within the TALON project.

In this context, our research team recently prepared a paper titled “Adaptive Reverse Task Offloading in Edge Computing for AI Processes”. In this work, we propose the concept of reverse offloading, where AI tasks are offloaded from the server to end devices. This approach is based on formulating an optimization problem aimed at improving overall performance. Our objective is to minimize AI task execution time, defined as the duration of the longest subtask, while also taking into account accuracy and energy constraints. We tackle this challenging Mixed Integer Non-Linear Programming (MINLP) optimization problem, using our newly developed EAI-ARO (Edge AI-Adaptive Reverse Offloading) algorithm. Our results demonstrate that this method significantly enhances system performance compared to both greedy and baseline AI task offloading algorithms.

DUTH remains fully committed to actively supporting the objectives of the TALON project.



UBITECH @ TALON

UBITECH introduces a scalable and fully generalizable AI Theoretical Framework. The framework is an AI-verified software solution and benchmarking tool that enables the measurement, storage, and visualization of energy consumption and hardware resource utilization during AI models' preparation and training phase at edge and cloud contexts. The framework leverages containerization to encapsulate AI model training. It deploys it within a Kubernetes cluster and benchmarks several widely used AI algorithms across different data modalities, including tabular, image, and time-series data.

POLYGLOT DATA STORAGE HIGHLIGHT

Check out the information flow adopted by the [TALON project](#)!

In an effort to deal with the challenges of next-generation networks, TALON combines PostgreSQL, MongoDB, MinIO, Kafka, InfluxDB and Elastic platforms. TALON developments are being built on top of these platforms. Therefore, TALON developed a Polyglot Data Management component as they bring a number of capabilities that are related to the needs of the project.

See more here: <https://lnkd.in/dJvncP-W>



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